

### Answer on Question #42820 – Math - Algebra

What are the zeroes of the polynomial  $3x^3 - 2x^2 - 7x - 2$ ?

#### Solution

$$P(x) = 3x^3 - 2x^2 - 7x - 2.$$

Possible Zeros:  $\pm 1, \pm 2, \pm \frac{1}{3}, \pm \frac{2}{3}$ .

We start by trying  $-1$  in synthetic division. Remember that  $-1$  is a zero if the remainder is zero.

-1	3	-2	-7	-2
		-3	5	2
	3	-5	-2	0

Therefore,  $x = -1$  is our first zero. Since the quotient resulting from synthetic division is always one degree less, the quotient that we have is the quadratic  $3x^2 - 5x - 2$  which can easily be factored.

$$3x^2 - 5x - 2 = 0$$

$$(3x + 1)(x - 2) = 0$$

Setting each factor equal to zero, we get

$$(3x + 1) = 0 \rightarrow x = -\frac{1}{3}$$

$$(x - 2) = 0 \rightarrow x = 2$$

**Answer:**  $-1; -\frac{1}{3}; 2$ .